

## Highly Cited Papers Emanating from the NHLBI Cardiovascular Cohort Studies

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### Disclosures: None

### Background

- NHLBI has been funding high-profile cardiovascular epidemiological cohort studies (including the well-known Framingham Heart Study) since the late 1940s.
- Questions have been raised about the overall productivity of the cohort studies given the size of the investments (over \$100 million per year), the advent of "big data," and the successes of larger-scale epidemiological projects in other countries.
- Sophisticated "big data" bibliometric resources make it possible to assess research productivity while accounting for differences in citation behavior related to scientific fields and time trends.

### Objectives

- Ascertain time trends of relative citation impact emanating from six longstanding NHLBI-cohort studies.
- Ascertain proportion of papers that are among the top 10% tier of citations, along with proportion of NHLBI top 10% papers that are supported by these cohort studies.

### Methods

- Publications (PMIDs) identified through internal NIH grant and contract records.
- Publication years 1981 – 2010.
- Publications from grants were linked to their "InCites™" (Thompson Reuters) citation record.
  - InCites™ provides a normalized citation count for each publication stratifying by year of publication, type of publication, and field of science.
- Primary bibliometric endpoints:
  - Proportion over time of all published papers that are among the top 10% cited for field, article type, and year of publication.
  - Proportion over time of all top 10% NHLBI papers emanating from the six cohort studies.

### Results

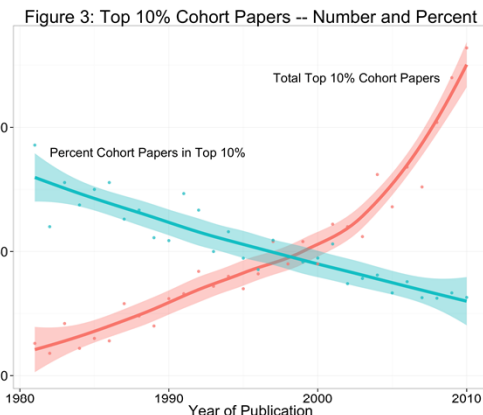
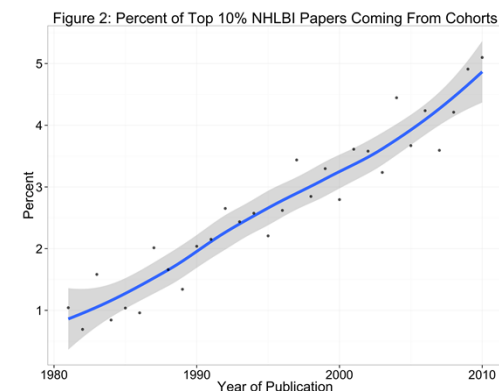
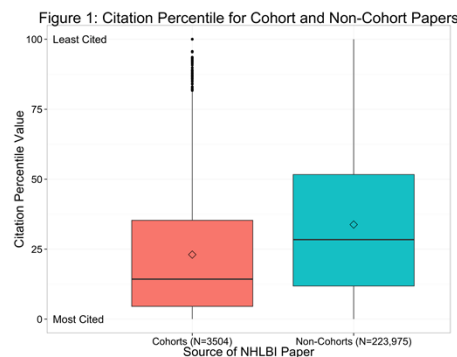
- Total NHLBI papers: 227,479
  - Top 10% papers 50,008 (22%)
- Papers from NHLBI cohorts: 3504 (2%)
  - Top 10% papers 1452 (41%,  $P < 0.001$  c/w others)

Table 1: Cohorts, Year Started, and Publications

Cohort	Year	Number of Papers
Framingham Heart Study	1948	1522
Coronary Artery Risk Development in Young Adults (CARDIA)	1985	406
Atherosclerosis Risk in Communities (ARIC)	1987	765
Cardiovascular Health Study (CHS)	1989	750
Jackson Heart Study (JHS)	1998	68
Multi ethnic Study of Atherosclerosis (MESA)	2000	320

Table 2: Most Common Topics (by InCites) for Cohorts Papers

Topic	Number (%)
Cardiac and Cardiovascular Systems	716 (20%)
Public, Environmental, Occupational Health	553 (16%)
Peripheral Vascular Disease	332 (9%)
Endocrinology and Metabolism	263 (8%)
Nutrition and Dietetics	229 (7%)



### Limitations

- Citations provide an incomplete picture of scientific impact.
- Pending analyses to consider funding, mechanisms, topics, and other covariates.

### Conclusions

- NHLBI Cohort Studies continue to be highly productive.
- Number of top 10% papers published increasing over time.
- Cohort studies contribute an increasing proportion of all NHLBI Top 10% papers (now nearly 1 in 20 come from cohorts).
- Proportion of cohort papers in top 10% is decreasing, perhaps due to expansion of epidemiology as a field.